EXHIBITION GUIDE

2014 IEEE NSS/MIC
Washington State
Convention Center
Seattle, WA USA
8-15 November 2014

IEEE Nuclear Science Symposium & Medical Imaging Conference

21st Symposium on Room Temperature Semiconductor X-Ray and Gamma Ray Detectors

EXHIBITOR PRESENTATIONS

2014 IEEE NSS-MIC Exhibition Guide

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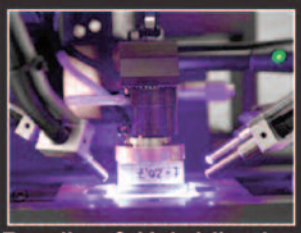

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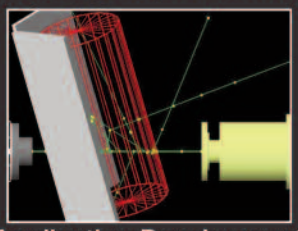

Application Development

Algorithms & Software

Systems Engineering

OEM Components

kromek™

detect image identify

Kromek is a leading solutions provider of medical imaging (SPECT, BMD and PET), nuclear decommissioning, security baggage scanning, liquid explosive screening, NDT imaging, radiation detection and gamma spectrometry.

Spectral x-ray and gamma ray detection technology for medical, industrial and security applications

We are an active research organisation both in the UK and in our subsidiaries in the USA.

Kromek is vertically integrated; from materials growth to end user products; from semiconductors to solutions.

www.kromek.com

End User Products

2014 IEEE NSS-MIC

Nuclear Science Symposium &
Medical Imaging Conference
21st Symposium on
Room Temperature Semiconductor X-Ray
and Gamma Ray Detectors

LOCATION

Washington State Convention Center - Hall 4A

EXHIBITION HOURS

Tuesday, November 11

Exhibit Open - Noon — 9 p.m.

Refreshment Breaks

Mid afternoon

Exhibitor Reception

starting at 7 p.m.

Wednesday, November 12

Exhibit Open — 9 a.m. to 6 p.m.

Refreshment Breaks

Mid morning and Mid afternoon

Thursday, November 13

Exhibit Open — 9 a.m. to 4 p.m.

Refreshment Breaks

Mid morning and Mid afternoon

Exhibition Closes at 4 p.m.

2014 IEEE NSS-MIC EXHIBITORS

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EXHIBITOR PRESENTATION SCHEDULE

All Exhibitor Presentations will take place in WSCC Room 4C-3

Tuesday, November 11, 2014

13:00 **What Digital Photon Counting Detectors Can Bring for Clinical PET**
Presenter: Lingxiong Shao, Systems Engineer Philips Healthcare, BG Imaging Systems Cleveland, USA

14:00 **Methods of Improving Silicon Neutron Detectors with comparisons to Resilient Diamond Detectors fabricated by the Company**
Presenter: Dr Susanne Walsh and Dr Gwenaelle Lefeuvre, Micron Semiconductor

Wednesday, November 12, 2014

09:00 **eX Series, a new readout solution for all Medipix detectors**
Presenter: Victor S. Rojas, X-Ray Imatek S.L.

09:30 **Alibava Systems: Tools for particle physics research and education**
Presenter: Manuel Lozano, Alibava Systems, S.L.

10:30 **Commercialisation of Novel Scintillators for Gamma and Neutron Detection**
Presenter: Dr Keith Hutton, Hilger Crystals

11:00 **Full digital approaches to radiation spectroscopy and measurements in Nuclear Physics**
Presenter: Carlo Tintori, CAEN Technologies

13:00 **The newest generation mechanical coolers from ORTEC**
Presenter: Gregor Geurkov, Greg Martin, Eric Broerman, ORTEC/AMETEK

14:00 **Radiation Detection Technologies for Medical, Nuclear, Industrial and Security Applications**
Presenter: Scott Cunningham & Rick Smith, Kromek

15:00 **Hybrid Photon Counting (HPC) Detectors for X-ray Applications in Industry and Medicine**
Presenter: Christian Broennimann, Dectris Ltd.

16:00 **SiPM Manufacture and Reliability for High Volume Applications**
Presenter: Dr. Carl Jackson, SensL Technologies, CTO and Founder

17:00 **Germanium Gamma-ray Imaging Detector: GeGI**
Presenter: Ethan Hull, Ph.D., CEO PHDS Co.

Thursday, November 13, 2014

09:00 **KETEK – Creative Detector Solutions**
Presenter: Dr. Reinhard Fojt, Managing Director KETEK

10:30 **Developments in Radiation Detection Solutions**
Presenter: John Frank, Saint-Gobain Crystals

11:00 **Latest Developments in Photomultiplier Tube Technology**
Presenter: Kengo Watase, Hamamatsu

13:00 **Updates from the SPADnet Project - fully digital, scalable and networked photonic component for time-of-flight PET applications**
Presenter: Edoardo CHARBON (TUDELFT & EPFL), Gábor NEMETH (Mediso Medical Imaging Systems)

14:00 **Latest Developments in MPPC (SiPM) Technology**
Presenter: Koei Yamamoto, Hamamatsu

EXHIBITORS

Acrorad Co., Ltd. Booth #129

13-23 Suzaki Uruma-shi,
Okinawa, 105-0013
Japan
Tel: +81 98 934 8960
Web: http://www.acrorad.jp

Acrorad is a company manufacturing CdTe single crystals, CdTe detectors, and devices consistently. Though CdTe has been recognized for its outstanding characteristics as a radiation detector for over 30 years, it was very difficult to manufacture high quality CdTe crystals and detectors for stable supply. After more than 20 years of research activity, Acrorad has successfully developed our own technology to realize 4-inch diameter single crystal by Traveling Heater Method (THM) which enables us to produce the highest quality CdTe radiation detectors in large volume. We exhibit not only the CdTe single crystal itself but also applied products based on this technology such as X-ray and Gamma-ray imagers.

Adit Electron Tubes Booth #118

300 Crane St.
Sweetwater, TX 79556
Tel: +1 325 235 1418
Web: http://www.electrontubes.com

ADIT Electron Tubes designs and manufactures photomultiplier tubes, housings, voltage dividers and signal processing modules. Photomultipliers are available in diameters from 1/2" to 9". Special tubes available are:

- tubes for use at cryogenic temperatures
- tubes with ultra low background
- glasstubes for high temperature environments
- tubes for space flight.

Two manufacturing facilities, in west Texas and west London, help to ensure fast delivery and competitive pricing.

Advanced Fusion Technology, Co.,Ltd — Booth #233

5-6-3 Sotokanda
Chiyoda-ku, Tokyo 101-0021
Japan
Tel: 81-3-6803-0177
Web: http://www.adfutec.com

Advanced Fusion Technology, Co., Ltd. (AdFuTec) is established in 2004. Almost all staff of AdFuTec have over 20 years experience in nuclear physics and industrial market in Japan. Introducing "Middle" resolution Gamma Spectroscopy system which consists of Srl2(Eu) detector, own MCA and analysis software.

CLEAR PULSE Co., Ltd. is established in 1971. Their products include originally developed spectrum stabilizer, digital rate meter, PC based PHA as the first model in Japan, CdTe detector + low noise charge sensitive preamplifier, MAPMT Multi-anode PMT Amp. unit.

Alibava Systems, S.L. — Booth #104

Eureka Building, Campus UAB - Bella Terra
Bellaterra, Barcelona 8193
Spain
Tel: +34 678694285
Web: http://www.alibavasystems.com

The ALIBAVA SYSTEM, is the first compact and portable system for the characterization of microstrip semiconductor radiation detectors. It is plug & play through USB, with windows, MacOS and linux analysis software included. It is conceived to easily characterize multichannel semiconductor detectors, providing high sensitivity to low signals and high speed. The front-end electronics is based on two units of a low noise ASIC (256 input channels) and a clock speed of 40MHz. The system is typically used to test microstrip sensors with variable interstrip distance by laser, radioactive source or particle beam. It includes trigger inputs, with discrimination, coincidence and lso a TDC to record the time arrival of each event. It can also generate a trigger output to synchronize with an external source, like a laser system. The system includes complete analysis software with a user-friendly interface. Electronic parameters (gain, noise, uniformity, etc.) and sensor parameters (charge collection, pulse shape, resolution, etc.) are easily extracted. The development was supported by CERN and more than 30 research institutes and companies are using it. The company can adapt to specific sensor needs depending on the sensor geometry or electronic output. Modifications for strip double-sided, pixel, 3D and other types of sensors have been developed for different customers. The EASY (Educational Alibava SYstem) version has been developed. Beyond its scientific and sensor R&D applications, the system can also be used in instrumentation lectures at the university teaching laboratories. The new features of the system (HV unit, laser source, micropositioner, etc.) make it more suitable for its handling by undergraduate and postgraduate students, who will greatly benefit in their instruction by using this system to learn about the properties of microstrip sensors and signal formation in those devices which are extensively used in a wide range of fields as High Energy Physics, Nuclear Physics, Medical Physics, etc. With the EASY system, the students have the possibility to learn about the characteristics of the silicon microstrip sensors or to repeat fundamental physics experiments with novel instrumentation and it includes an exercise book. The company as well designs and manufactures silicon sensors, pixel and strips, at affordable prices. Readout systems for the readout of SiPMs and other radiation sensors are under development.

Alpha Spectra, Inc. Booth #106

715 Arrowest Court
Grand Junction, CO 81505
Tel: +1 970 243 4477
Web: http://www.alphaspectra.com

Alpha Spectra has manufactured over 100,000 detectors in becoming the world's second largest producer of NaI(Tl) scintillation crystals. Our company was founded in 1986. We are proud of the manner in which our staff has worked together in developing a technology-based company with world class expertise.Alpha Spectra, Inc. is the only American-Owned Company in the industry that utilizes its own purification process and growth process. Our method begins with exceptionally clean starting material. The growth technique was developed and advanced in our crystal growth laboratory.

Alpha Spectra, Inc. manufactures scintillation detectors for homeland security, health physics, academic research, industrial thickness and level gauges, medical diagnosis and oil and gas exploration. We offer designs that utilize other scintillation materials including: BGO, CsI(Na), CsI(Tl), CaF2 (Eu), Plastic and Liquid Scintillator materials. We now grow NaI(Tl), NaI(pure), CsI(Na), CsI(Tl), and CsI(pure) at our facility. ASI has developed over 1000 different detector designs. Our high-quality detectors are assembled utilizing techniques that have been developed with over 100 years of combined working experience. We excel in providing excellent support in the design and development of prototype detectors. Our staff will support your project and provide the expertise and responsiveness that it requires. Contact Alpha Spectra, Inc. for your scintillation detector requirements and be assured that you will receive personal attention. Stop by our trade show booth and ask us about new developments.

AMPTEK Inc. Booth #311

14 De Angelo Drive
Bedford, MA 1730
Tel: +1 781 275 2242
Web: http://www.amptek.com

FAST SDD® detectors with 1,000,000 CPS. Also Si-PIN, SDD and CdTe XRF Detectors with their Preamplifiers and DPPs; GAMMA-RAD5 complete, integrated gamma-ray spectrometer; and new, compact PMT Digital Tube Base. Simple to use, low-cost systems for laboratory and field use, and for OEMs developing table-top or hand-held XRF analyzers.

ANSeeN — Booth #305

216 Incubation Center, 3-5-1 Johoku, Naka-ku
Hamamatsu, Suizuoka 432-8561
Japan
Tel: +81 53 522 7708
Web: http://www.anseen.com

Featuring:

- X-Ray Color Imaging with CdTe Detector
- Photon-Counting Digital Pulse Processor
- Measurement Equipment
  - MCA
  - Desimeter
  - Spectormeter

APL Engineered Materials — Booth #306

2401 N. Willow Road
Urbana, IL 61802
Tel: 217-367-9084
Web: http://www.aplmaterials.com

For over 70 years, APL has supplied high purity metal halides to the lighting world. The technology used for producing these beaded materials was developed at APL and can be used for other markets that demand high purity, low oxygen, and low water.

APL offers hundreds of ultra-pure halides as anhydrous beads or powders in pure form, as multi component mixtures, or as custom doped homogeneous mixtures suitable for scintillator use.

Baltic Scientific Instruments — Booth #301

Ganibu dambis 26, P.O.Box 33
Riga, Latvia LV-1005
Tel: +371 6738 3947
Web: http://www.bsi.lv

Baltic Scientific Instruments was established in 1994 on the basis of Riga Research and Development Institute for Radio-Isotope Apparatus (RNIIRP, est.1966). The company specializes in the development and serial production of the spectrometric devices based on silicon (SiLi), high-pure germanium (HPGe) and cadmium-zinc-tellurium (CZT) detectors. All systems are available with nuclear electronics and analytical software packages. Our products and solutions are applied in nuclear energetic and ecology, geology and mineral resource industry, medicine and research activities, customs control and other spheres.

Berkeley Nucleonics — Booth #116

2955 Kerner Blvd.
San Rafael, CA 94901
Tel: +1 415 453 9955
Web: http://www.berkeleynucleonics.com

Berkeley Nucleonics Corporation (BNC), an instrumentation manufacturer founded in 1963, is celebrating 50 years of innovation. BNC manufactures industry-leading lines of precision test, measurement and nuclear instrumentation. Berkeley Nucleonics Corporation is dedicated to providing top quality models of radiation isotope identifier devices, portable gamma spectroscopy devices plus much more. Our radiation isotope identifier devices Model 945/RD-120 Backpack and solutions are well suited for an array of applications including homeland security, baggage & cargo screening, environmental protection, law enforcement, HAZMAT & medical.

Berthold Technologies — Booth #205

99 Midway Lane
Oak Ridge, TN 37830
Tel: +1 865 483 1488
Web: www.berthold.com

Berthold Technologies supplies extremely sensitive and reliable radiation monitors for radiation protection and health physics in research, nuclear medicine, nuclear engineering and decommissioning. Our instrumentation measuring radioactive contamination, dose and dose rate (gamma & neutron radiation), activity and airborne activity concentration range from small portable instruments to large systems. Our experienced sales engineers provide complete and competent advice and support.

C&A Corporation — Booth #225

6-6-40 Aramaki-aza-aoba, Aoba-ku
Sendai, 980-8579
Japan
Tel: +805036302007
Web: http://www.c-and-a.jp

C&A Corporation was founded in 2012 as a spin-off venture company from the Institute for Materials Research in Tohoku University, Japan. The name "C&A" is derived from "Crystals and Applications". C&A is capable to manufacture variety of scintillator crystals not only ingot but also pieces or arrays.

The main products of C&A Corporation are following:

1. GAGG (Ce:Gd3(Al,Ga)5O12), which has the highest light yield among oxide scintillators.
2. La-GPS (Ce:(Gd,La)2Si2O7), which keeps high light yield, fast decay time and high energy resolution up to high temperature.
3. Eu:SrI2, which has high light yield, high energy resolution. It will be provided with hermetically sealed canister.

CAEN Technologies Inc. Booth #211, 213

1140 Bay Street, Suite 2C
Staten Island, NY 10305
Tel: +1 718 981 0401
Web: http://www.caentech.com

CAEN was established in 1979 and is today one of the most important industrial players in the nuclear physics research market. Its products are currently used in the most prestigious laboratories, research centers, and universities worldwide. Throughout the years CAEN has strengthened by inserting a "massive" number of young physicists in all of its business activities: today 10% of the total employees are physicists. CAEN operates in a highly specialized international market: the design, production and supply of electronic instrumentation for radiation and low light sensors. The company targets two main areas: nuclear physics research (both at high and medium-low energies) and its fall-out applications. CAEN is involved in several leading-edge R&D collaboration projects and has also been involved in R&D projects in the fields of security and environment. CAEN product line includes:

- High and Low Voltage Power Supplies
- Multichannel Digitizers
- Digital Pulse Processing Electronics
- Multi Channel AnalyzersSolutions for HS and Environmental Monitoring
- Signal Generators and Detector EmulatorsEducational Kits

Canberra Booth #200, 202

800 Research Parkway
Meriden, CT 06450
Tel: +1 203 639 2148
Web: http://www.canberra.com

Canberra is the leading supplier of innovative and cost-effective nuclear measurement solutions and services used to maintain safety of personnel, assess the health of nuclear facilities and safeguard the public and the environment. Applications for Canberra offerings include health physics, nuclear power operations, Radiation Monitoring System (RMS), nuclear safeguards, nuclear waste management, environmental radiochemistry and other areas.

CMCAMAC — Booth #313

24 Halley Dr.
Pomona, NY 10970
Tel: +1 845 364 0211
Web: http://www.cmcamac.com

Since 1997, Cheesecote Mountain CAMAC has specialized in the design and manufacture of CAMAC modules for high speed, easy to use laboratory data acquisition. Our product line includes a USB crate controller (with EZCamac software), FERA driver (with memory and histogrammer) and ADCs (including a FERA compatible ADC). All modules incorporate buffer memories and FASTCAMAC readout for low dead time, high throughput data acquisition.

DECTRIS Ltd. — Booth #224

Neuenhoferstr. 107
Baden, 5400
Switzerland
Tel: +41 56 500 2100
Web: www.dectris.com

DECTRIS is a technology leader in X-ray detection. PILATUS hybrid pixel and MYTHEN microstrip X-ray detector systems have transformed data collection at synchrotron light sources, in the laboratory as well as with industrial X-ray applications. Main advantages are unsurpassed dynamic range, noise-free counting and high frame-rates, providing best possible data at shortest acquisition times. Direct X-ray detection results in highest possible spatial resolution and eliminates image distortions. The modularity of the PILATUS and MYTHEN detector technology enables a broad range of products and detector geometries. Selectable sensor thickness and readout speed options allow any experimental requirements to be matched perfectly. The PILATUS laboratory series brings all advantages of the hybrid pixel technology to the X-ray laboratory. The newest product is the EIGER 1M detector, with increased spatial resolution and frame rates exceeding 1kHz. DECTRIS has the expertise and the capacity to provide specific detector solutions for novel scientific experiments and efficient industrial X-ray detection. Since the foundation in 2006, DECTRIS has delivered more than 750 systems to its global customers. With its active R&D program and the commercialization of new developments DECTRIS stays at the cutting edge of X-ray detector science. DECTRIS was awarded several prizes including the 2010 Swiss Economic Award in the High-Tech Biotech category, the most prestigious prize for start-up companies in Switzerland.

Eljen Technology — Booth #310

1300 W. Broadway
Sweetwater, TX 79556
Tel: +1 325 235 4276
Web: http://www.eljentechnology.com

Eljen Technology is one of the world leaders in the development and manufacturer of organic plastic scintillation material encompassing cast plastic and liquid scintillators as well as reflective paints, and glues. We have grown to over 60 employees and ship our products worldwide. Visit our booth to see new developments in organic scintillators including our new PSD Plastic Scintillator (EJ-299-33A) and our Li6/ZnS Thermal Neutron detector (EJ-426). We have been providing scintillators and assemblies to research and commercial customers worldwide since 1997.

Furukawa Co., Ltd. — Booth #329

1-24-13, Kannondai
Tsukuba-City, Ibaraki, 305-0856
Japan
Tel: +81 0298392151
Web: www.furukawakk.co.jp

Furukawa has been developing scintillation crystals and their applications. Pr:LuAG crystal possess interesting properties such as high energy resolution and very fast decay time. We demonstrated a positron emission mammography (PEM) system using Pr:LuAG. Recently we discovered novel scintillation crystals of Ce:GAGG. The light yield of Ce:GAGG is 57,000 photon/MeV. We exhibit both crystals and their applied products.

GE Energy — Booth #101

8499 Darrow Road
Twinsburg, OH 44087
Tel: 330-425-3755
Web: http://www.rsweb@ge.com

GE offers the Reuter Stokes product line of radiation detectors for neutron scattering research, Homeland Security and safeguard applications. With over 50 years of design, manufacture, and operational experience, and an installed base of thousands of detectors, we have both the technical expertise, quality and manufacturing skill your application needs to succeed.

GE Healthcare DCD Rehovot — Booth #103

12 Hamada St.
Rehovot, Israel
Tel: +972 54 7299731
Web: http://www.gehealthcare.co.il

GE Healthcare Rehovot engages in the research and development, manufacture and sale of products for application in medical nuclear imaging. The company develops cadmium zinc telluride detector technology used in healthcare, space research and homeland security. It grows several tones of CZT crystal a year using the modified horizontal Bridgeman technique, and has manufacturing capabilities of over 10,000 40x40mm2 CZT modules annually. It offers cadmium zinc telluride wafers, detector modules, and detector module readout systems.

Hamamatsu Corporation — Booth #210, 212

360 Foothill Rd.
Bridgewater, NJ 08807
Tel: +1 908 231 0960
Web: http://www.hamamatsu.com

Hamamatsu Corporation is the North American subsidiary of Hamamatsu Photonics K.K. (Japan), a leading manufacturer of devices for the generation and measurement of infrared, visible, and ultraviolet light. These devices include photodiodes, photomultiplier tubes, scientific light sources, infrared detectors, photoconductive detectors, and image sensors. The parent company is dedicated to the advancement of photonics through extensive research. This corporate philosophy results in state-of-the-art products which are used throughout the world in scientific, industrial, and commercial applications.

Hellma Materials GmbH — Booth #204

Moritz-von-Rohr-Strasse 1
Jena, D07745
Germany
Tel: +49 3641 2877 0
Web: http://www.hellma.com

Hellma Materials produces high-tech materials for various optical applications and scintillation crystals. CeBr3 is the cutting edge scintillation material and features high energy resolution, high light yield and very low background. Based on its outstanding properties Hellma Materials CeBr3 enables high-end instrumentation for security, medical and geophysical applications.

Hilger Crystals — Booth #323

Westwood Margate
Kent, CT9 4JL
UK
Tel: +44 1843 231166
Web: http://www.hilger-crystals.co.uk

Hilger Crystals produces a range of high quality synthetic crystal materials such as NaI(Tl), CsI(Tl), CsI(Na), BGO, CdWO4, ZnWO4, LSO, LYSO etc for use as scintillation crystals for x-ray and gamma ray detection, these can also be fabricated in to pixelated arrays for imaging applications. Scintillation crystals are commonly used in particle physics experiments and detectors constructed for routine monitoring applications. Hilger along with sister company have developed CLYC which provides the capability for neutron & gamma detection simultaneously. Prototype as well as large quantity production can be achieved to satisfy research and commercial end users.

HZC Photonics — Booth #300

Hainan Zhanchuang Factory, Nanyihuan Road
Laocheng Hi-tech Industry Demonstration Zone
Chengmai, Hainan 571924 China
Tel: 86 18600766139
Web: www.hzcphotonics. om

HZC PHOTONICS is a high technology company with full of vitality and innovation. In 2011, HZC PHOTONICS acquired the photomultiplier tube production line with advanced international level from PHOTONIS France, including all production equipment, patents, know-how and technical information. HZC PHOTONICS devotes to develop a series of PMTs with superior performance to customers from all over the world.

Inrad Optics — Booth #328

181 Legrand Ave.
Northvale, NJ 07647
Tel: 201-767-1910
Web: http://www.inradoptics.com

Inrad Optics grows and fabricates crystals used in nuclear detection, missile warning systems, and laser harmonic generation. Our newly launched Stilbene Scintillators are available in 1” to 4” diameters. The company also produces X-ray monochromators, toroidal mirrors, transmission flats, aspheric mirrors in metal, glass, and crystalline materials. Contact sales@inradoptics.com.

Integrated Detector Electronics — Booth #317

Martin Linges Vei 25
Fornebu, N-1364
Norway
Tel: +4767414990
Web: http://ideas.no/

IDEAS - Integrated Detector Electronics AS – develops integrated circuits for radiation detection and imaging applications. The company was founded in 1992 with strong background in applied physics, radiation detector instrumentation and electrical engineering. The headquarter is located near Oslo, Norway. The products are application specific integrated circuits (ASICs) for many types of radiation detectors, which are applied in medical imaging, industrial scanning, nuclear science and astrophysics. The circuits can be delivered in any quantity to commercial and scientific customers orldwide. The ASIC designs feature low-noise and low-power amplifiers for the readout of, for example, CZT/CdTe/TlBr, silicon, PMTs/MCPs and APDs/SiPMs/MPPCs. Depending on the requirements, the circuits can be self-triggering, and they can provide fully digital data of the pulse heights, the addresses, and trigger time. For space applications, the circuits can be designed radiation hardened against latch-up and single-event upset. Recent ASIC designs for new technologies support spectroscopic photon counting, dose monitoring, continuous waveform sampling, cryogenic operations, and infrared focal-plane arrays.

KETEK GmbH — Booth #229

Hofer Str. 3
München, 81737
Germany
Tel: +498967346770
Web: http://www.ketek.net

KETEK Silicon Photomultipliers (SiPM) for optical spectroscopy and ultralow level light detection KETEK is a leading manufacturer of Silicon Photomultipliers (SiPM), presenting a broad portfolio of SiPM modules with areas from 1 mm² to 36 mm² and best in class photon detection efficiency (PDE) for blue light (420nm), applicable from UV to NIR. Additionally KETEK offers tailor-made array solutions e.g. for PET. The wide range of sensor characteristics, geometries and packages covers the requirements of manifold applications like medical imaging, optical spectroscopy or bio-sciences.

Kromek Group plc — Booth #123, 222

Netpark, Thomas Wright Way
Sedgefield, Durham TS213FD
UK
Tel: +44 1740625278
Web: http://www.kromek.com

The Kromek Group offers many innovative solutions to serve the emerging radiation detection needs of the medical, nuclear, industrial and security markets. Kromek has expertise in developing detector materials such as CdZnTe, detector fabrication, ASICs and electronics design, bonding, algorithm and software development, and full systems engineering and test. To serve our customers, Kromek delivers OEM components and modular technology platforms that enable the development of advanced imaging and radiation detection solutions.

labZY, LLC — Booth #132

17 Bisbee Ct., Unit F
Santa Fe, NM 87508
Tel: +1 505 920 0045
Web: http://www.labzy.com

For more than twenty years we have built an expertise in real time digital pulse processing. We continue to develop new concepts and to introduce new revolutionary products for radiation measurement. Based on digital pulse processing, our open spectroscopy platforms offer exceptional performance in exceptionally small packages. labZY low-power X-Ray spectrometers and multichannel analyzers are fully user configurable and customizable - the perfect solution for education and research.

Luxen Technologies — Booth #107

396 Worldcupbuk-ro, 1113 Nuritkum Sq. R&D Tower
Mapo-gu, Seoul 121-795
Korea
Tel: +82 2 2132 2300
Web: http://www.luxentech.com/eng/main.php

Luxen Technologies, Inc. is the fabless semiconductor company with long experience and knowhow in designing low power, low noise, ultra high-precision analog circuitry and system, specialized in developing key readout ICs (ROICs) for digital radiation imaging sensors and detectors in applications of digital radiography, physics, chemistry, environment and biology where precise detection and efficient processing of micro analog signals is critical. Luxen Technologies, Inc. offers various configurations of photon counting ROICs such as 256x256, 128x128, 64x64 and 16bit 4 bin multi-energy levels for /X-ray detectors, and charge integrating ROICs for large flat panel X-ray detectors. We also provide “Digital X-ray Imaging Platforms”, the photon counting X-ray detectors consisting of CdTe sensors, ROICs and digital signal processing modules, backed up with US and Europe patents for high resolution and high speed data acquisition in the next generation digital X-ray detector systems.

Mediso Medical Imaging Systems — Booth #319

14 Alsotorokvesz
Budapest, H-1022
Hungary
Tel: +36 1 399 3030
Web: http://www.mediso.com

Mediso have been working in the field of nuclear and molecular medicine since 1990 with a profile of development, manufacturing, sales and servicing of multi-modality in-vivo imaging systems. The company offers complete solutions from hardware design to evaluation and quantification software, both for clinical patient care and high-level life science research into all animal models in between rodents and primates. Besides the unique triple-modality clinical SPECT-CT-PET hybrid AnyScan® system, Mediso launched he world's first pre-clinical integrated PET-MRI and SPECT-MRI cameras as members of the nanoScan® high-end small animal imager family, consisting of SPECT, PET, CT and MRI modalities. Mediso runs successfully two complex clinical diagnostic, research and educational centres and offers clinical and evaluation software trainings for the international medical community.

Micron Semiconductor — Booth #307

1 Royal Building, Marlborough Road
Lancing, Sussex BN15 8SJ
UK
Tel: +44 1903 755 252
Web: http://www.micronsemiconductor.co.uk

Manufacturer of silicon and diamond detectors for physics, space and industrial applications,new projects include NASA's SOLAR PROBE PLUS, the closest encounter to the sun, utilising SOI technology. New products include neutron detectors using B10 converter for use in reactors with high gamma rejection and bore hole exploration and integration of the DSSD 128 x 128 strip ultra large area 10 cm x 10cm silicon microstrip TTT series detectors with Alibava 40 MHz electronics readout is directly into a PC. Single crystal diamond detectors are being offered in active areas 4mm x 4mm to 7mm x 7mm with thicknesses from 50 um to 500um in various designs including single area, pixels, quadrants and duolaterals utilising low Z materials. Picoampere leakage currents, picosecond response times, ultra radhard are the key advantages of synthetic diamond detectors.

MILABS BV — Booth #302

Heidelberg, Laan, 100
Utrecht 3584 CX, The Netherlands
Tel: 31-88-756-5343
Web: http://www.milabs.com

MILabs provides high-end preclinical imaging solutions for biomedical research. Today these systems contribute worldwide to the development of new diagnostic solutions and therapies for diseases such as diabetes, cancer, cardiac and neurodegenerative diseases. The systems are unique with U-SPECT as the highest resolution, fastest and highest sensitivity small-animal SPECT system and VECTor as the only technology capable of easily acquiring excellent simultaneous SPECT and PET imaging. These MILabs systems can be configured as fully integrated single, dual, or triple modal platform with choice of SPECT, PET and CT, with attractive options to smoothly combine these with Optical or MR imaging subsystems.

For more information please visit us on: www.milabs.com

Northrop Grumman — Booth #303

1201 Continental Blvd.
Charlotte, NC 28273
Tel: 704-588-2340
http://www.northropgrumman.com/BusinessVentures/SYNOPTICS

Northrop Grumman SYNOPTICS, the world's leading manufacturer of synthetic lasing crystals, will be displaying its new line of scintillator crystals. Manufactured under license from LLNL, we will have packaged europium doped Strontium Iodide in addition to other cerium doped garnets and gallium garnets.

ORTEC — Booth #223, 322

801 S. Illinois Ave.
Oak Ridge, TN 37831
Tel: +1 865 483 2124
Web: http://www.ortec-online.com

ORTEC has long been an industry leader in the design and manufacture of precision gamma-ray and alpha particle detectors, signal processing electronics, software, and systems for industry and government requirements. The ORTEC brand name is synonymous with quality and innovation in nuclear instrumentation. The product line covers over 1600 products including instruments and systems for research in nuclear physics, nuclear medicine, nuclear power plant, nuclear forensics, government nuclear facility operations, special nuclear material safeguards, search and identification of radioactive materials, and chemical weapons detection. There can be scarcely any physics research laboratory in the world which is not a user of ORTEC NIM instruments. ORTEC also manufactures a line of liquid-nitrogen free, high-purity germanium (HPGe) detection systems, for both portable and fixed applications. New Products on display will include MOBIUS, a liquid nitrogen recycler and LDM-1 a fully integrated HPGe digital spectroscopy system that eliminates liquid nitrogen and is immune to thermal cycling.

PHDS — Booth #130

3011 Amherst Road
Knoxville, TN 37921
Tel: +1 865-481-3725
Web: www.phdsco.com

From crystal growth through software application, PHDS Co. manufactures gamma-ray imaging germanium-detector systems. The portable Germanium Gamma-ray Imager (GeGI) is capable of 4π Compton gamma-ray imaging for visual location and spectroscopic identification of isotopes. Using other imaging techniques, GeGI can provide detailed near-field gamma-ray imaging information from multiple-isotope distributions.

Philips Digital Photon Counting — Booth #124

Pauwelsstrasse 17
Achen, 52074
Germany
Tel: +49 241 969 79130
Web: http://www.philips.com/digitalphotoncounting

Philips Digital Photon Counting is dedicated to designing and developing innovative digital detector solutions with high integration levels to revolutionize single photon counting in a broad range of applications such as medical imaging, high energy physics and analytical instrumentation

Although photon counting is by definition a digital task, conventional silicon photomultipliers combine the electrical pulses generated by multiple photon detections into a single analog output signal that has to be processed by expensive power-consuming electronics in order to recover the photon count.

By integrating low-power CMOS electronics into the silicon photomultiplier chip, the team at Philips has developed a silicon photomultiplier in which each photon detection is converted immediately into an ultra high speed digital pulse that can be directly counted by on-chip counter circuitry. Moreover, these revolutionary new silicon photomultipliers can be manufactured using a CMOS process technology.

In contrast to conventional silicon photomultipliers, the Philips silicon photomultiplier is therefore an all-digital (digital-in/digital-out) device. As a result, it produces faster and more accurate photon counts with extremely well-defined timing of the first photon detection, both of which are important factors in applications such medical imaging scanners and high-energy nuclear particle detectors.

Key Features

- 8 x 8 pixels array
- Single photon counting capability
- Integrated Time-to-Digital converter
- First photon trigger (configurable)
- Excellent timing resolution
- Fully digital interface
- Four side tileable
- Configurable validation network for effective dark-count suppression
- Low disturbance by external magnetic fields

Polymer Assembly Technology, Inc. Booth #105

104 T.W. Alexander Drive, Bldg 7, P.O. Box 13279
Research Triangle Park, NC 27709
Tel: +1 919 314 5520
Web: http://www.polymerassemblytech.com

Polymer Assembly Technology provides prototype and low-volume flip chip assembly services for fine-pitch (70µm) pixel imaging devices and temperature-sensitive II-VI and III-V devices, including: optical, radiation, and bio-medical sensors, and optical/polymer-MEMS. High-density interconnects are made using low applied forces onto low-temperature curing, electrically-conductive adhesives, applied using a proprietary stencil printing technique. This technology offers a low-cost Hybridization alternative to Indium Bump Bonding or wafer solder plating.

Precision Data Technology Booth #304

3409 McDougall Ave.
Everett, WA 98201
Tel: +1 425-259-9237
Web: http://www.pdt-inc.com/

Precision Data Technology (PDT), a manufacturing and product development company located in the Pacific Northwest, provides quality test and measurement instrumentation for the nuclear safeguards industry. Our product line consists of a variety of standard and customized charge-sensitive amplifier modules providing users a complete, efficient and reliable solution for neutron counting. PDT also offers a wide variety of compact portable and complete neutron assay measurement systems using both He3 detectors and B10 detector technology.

During the 2014 IEEE conference, PDT will be displaying a wide variety of neutron measurement instruments such as the PDT10A, PDT20A, PDT100A, PDT110A, PDT250A, neutron detectors slabs and complete Boron-10 systems.

Quaesta Instruments Booth #324

1665 East 18th Street, Suite 207
Tuscon, AZ 85719
Tel: +1 520 882 3706
Web: www.quaestainstruments.com

Quaesta Instruments specializes in the design and manufacture of digital and analog electronic devices, and integration of systems. Our products include data loggers, environmental sensors, radiation detectors and telemetry devices and services. Along with these products, our expert team of engineers can work with you to create unique solutions to your instrumentation needs. Quaesta Instruments is also the industry leader for neutron detection. Our highly portable and uncompromisingly powerful neutron pulse monitor makes us the clear choice for neutron detection in a research or security application. Our devices are robust, highly configurable, and ideal for both research environments and nuclear security applications.

Rockwood Lithium — Booth #120

Industriepark Hoechst, Gebaeude
Frankfurt, 65926
Germany
Tel: +49 69401260
Web: http://www.rockwoodlithium.com

Rockwood Lithium is the world's leading supplier of scintillator materials such as Cesium Iodide, Cesium Bromide, Thallium Iodide, Lithium Fluoride and Strontium Iodide. Furthermore Rockwood Lithium supplies other cesium compounds as well as Cesium salts and Lithium salts. Our product portfolio is based on continuous research and development of leading edge technologies. Headquartered in Germany, the Rockwood Lithium serves its customers with a worldwide network of sales offices as well as with production sites in Germany, both South and North America, India and Taiwan. Since 2004, Rockwood Lithium has been part of Rockwood Holdings, Inc. In 2012 the brand name changed from Chemetall Lithium to Rockwood Lithium.

SAFC Hitech — Booth #315

1429 Hilldale Ave.
Haverhill, MA 01832
Tel: +1 978 374 5200
Web: http://safchitech.com

SAFC Hitech provides unique high purity metal halides for crystal growth and thin film applications.

- 4-6N metals purity
- Low trace moisture and oxygen
- Powder and beaded forms
- Compositions and eutectics
- Doped halide beads
- Customization
- Flexible packaging
- Global warehousing and distribution systems

For further information visit www.safchitech.com

Saint-Gobain Crystals — Booth #201, 203

17900 Great Lakes Parkway
Hiram, OH 44234
Tel: +1 440 834 5600
Web: http://www.detectors.saint-gobain.com

Saint-Gobain Crystals provides novel radiation detection solutions for a variety of applications including the Security, Industrial, Physics, Medical and Geophysical markets. Products include inorganic and organic scintillators, scintillating fibers, proportional counters, electronics and recent innovative solutions in the field of gamma and neutron detection. Bicron®, Harshaw, TGM Detectors® and Gamma Labs are a few of the respected companies that make up the long history of Saint-Gobain Crystals. Recent developments include next generation scintillation materials such as BrilLanCe™ (LaBr3 and LaCl3) and PreLude420™ (LYSO), NeuPort™ to replace He-3 tubes in neutron detection applications such as portal monitors, and the Sensor Kit™ electronics module for improved performance and time to market. Saint-Gobain will be presenting technical posters and papers at this year's conference.

Oral Presentation:
Abstract #: 1586 Paper ID: N39-2 Title: Enhanced Alpha-Gamma Discrimination in Co-Doped LaBr3(Ce)Session Info: N39: Scintillators and Scintillation Detectors III: Scintillators - Applications I; on Wednesday, Nov. 12 @ 14:15 in room: #608 & 609. Poster Presentation: Abstract #: 1588 Paper ID: N27-27 Title: Scintillation Performance of Ce Only and Sr Co-Doped Cs2LiYCl6 Crystals up to 180° C. Session Info: N27: NSS Poster Session II – Scintillators and Scintillation Detectors; on Tuesday, Nov. 11 @ 14:00 in room: 4B. Please stop by our booth to discuss your application.

ScintiTech/Amcrys — Booth #231

1000 Mount Laurel Circle
Shirley, MA 01464 USA
Tel: 978-425-0800
Web: www.scintitech.com

From crystal growth to complete nuclear electronic system package manufacturing makes ScintiTech/Amcrys a unique supplier on today's market. Vast variety of NaI(Tl), CsI(Tl) and CsI(Na) and other scintillation materials and detectors with integrated readout units are in production line for fast delivery as well as customized products according individual specifications.

Scionix Holland BV — Booth #312

Regulierenring 5, 3981 LA Bunnik
Netherlands
Tel: +31 30 6570312
Web: http://www.scionix.nl

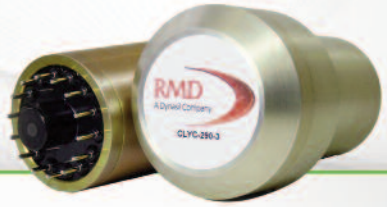
SCIONIX Holland B.V. is a company specialized in the design and manufacture of instruments for the detection of Nuclear Radiation based on the principle of scintillation. The company was established in 1992. Besides a wide range of standard scintillation detectors we supply an extensive variety of tailor-made scintillation detectors to the specifications of the end-user. All known and generally available scintillation materials are employed ranging from plastic scintillators and liquid scintillators to inorganic crystals like NaI(Tl), CsI(Tl), high density BGO and high resolution CeBr3 crystals. The many years of experience in the manufacture of scintillation detectors is an important factor in our business. The main fields in which we are active are Science, Medicine and Industry. Some other areas are Environmental Physics, Nuclear- and High-Energy Physics, Space Research, Medical applications and Security. SCIONIX maintains relations with a number of Universities and companies where research in the application of scintillation materials and detector techniques is conducted. Keywords in our business model are High Quality and Flexibility with the aim to develop and maintain long lasting relationship with our customers.

SensL Technologies Ltd. — Booth #111,113

Lee House, Riverview Business Park, Bessboro Rd., Blackrock
Blackrock, Co. Cork,
Ireland
Tel: +353 21 4350442
Web: http://www.sensl.com

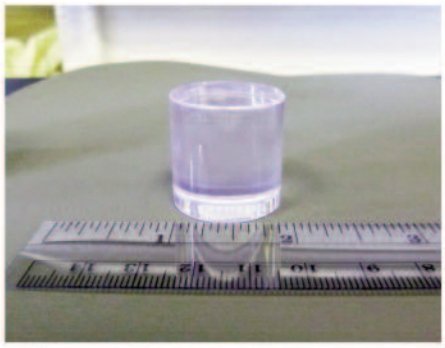
SensL is the leader in low light sensing with a range of Silicon Photomultipliers (SiPM's) which are used in a wide range of applications including nuclear medicine and radiation detection and monitoring. SensL SiPM's range in size from 1mm to 6mm and can also be placed in array configurations to create very large active areas with market leading fill factor. The latest C-Series sensors offer un-paralleled performance with PDE >50%, dark count rates <100Khz per mm2 and a unique fast output option which provides rise times of .3ns. SensL SiPM's are also designed for high volume applications with proven sensor uniformity and 100% testing and characterization to JDEC quality standards. With hundreds of customers using SensL SiPM's in their applications now is the time to move from PMT approaches. Visit us on the web at http://sensl.com or at our booth while at this year's IEEE NSS/MIC conference.

Hilger Crystals Ltd. and RMD Present State-Of-The-Art Detectors

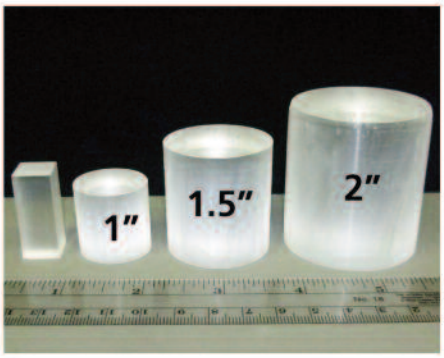


See us at the Hilger Crystals booth #323
Live demonstrations and new materials

- CLYC (Cs_2LiYCl_6:Ce) 1.5″ and 2″ diameter dual-mode gamma/neutron detectors now available
- New CLYC detectors plus SiPM with optimized geometry to replace ^{3}He tubes in handheld instruments
- CLLBC ($Cs_2LiLa(Br,Cl)_6$:Ce) – available in 2015 – better neutron efficiency than ^{3}He and gamma energy resolution as good as the best gamma-only scintillator
- Strontium Iodide (SrI_2:Eu) – up to 1.5″ DIA cylinders available now (<4% energy resolution @ 662keV)
- New 2″ x 2″ gamma/neutron plastic scintillators
- Larger ceramics: 2″ diameter GLuGAG
- RadCam II spectroscopic gamma-ray imaging system
- Low afterglow CsI(Tl) crystals and arrays
- Hilger Crystals core materials: KBr, KCl, NaCl, CsI, NaI(Tl), CsI(Tl), CsI(Na), $CdWO_4$, $ZnWO_4$, YAG(Ce), YAP(Ce), LYSO(Ce), BGO



SrI_2 Crystal



CLYC Crystals

Hilger Crystals
A Dynasil Company

RMD
A Dynasil Company

www.rmdinc.com info@rmdinc.com 617.668.6800

SGX Sensortech LTD. Booth #128

Sirius House, Watery Lane, Wooburn Green
High Wycombe, Bucks HP10 0AP
UK
Tel: +44 1628 533060
Web: http://www.sgxsensortech.com

SGX Sensortech manufactures high quality solid state x-ray detectors and pulse processing instrumentation for the x-ray analysis market. SGX have a distinguished heritage in the design and manufacture of x-ray detectors, previously known as "e2v scientific instruments" and "Gresham". With a full range of products from high performance, high efficiency Si(Li) detectors through to the latest Silicon Drift detector designs, including digital pulse processing electronics, SGX Sensortech has the right solution to address the needs of OEM system manufacturers and end users alike. SGX Sensortech x-ray detectors may be found in many X-ray spectroscopic applications.

Shanghai SICCAS High Technology Booth #125

1295 Ding Xi Road
Shanghai, 200050
China
Tel: +86 21 52411092
Web: http://www.siccas.com

Established in 1987, Shanghai SICCAS High Technology Corporation is a research-based enterprise wholly invested by Shanghai Institute of Ceramics, Chinese Academy of Sciences (SICCAS). The main products cover varies inorganic non-metallic materials including artificial crystals, structural ceramics, functional ceramics, special coatings and related components. SICCAS, thanks to the tremendous R&D support from Shanghai Institute of Ceramics, has developed various industrial customers worldwide .Through innovation and commercializing lab-technology, SICCAS is able to supply quality products to benefit our customers and greatly committed to meeting the high expectations of our business partners, shareholders, investors, regional communities, and all other stakeholders.

SINTEF Minalab — Booth #321

Gaustadalleen 23C
Oslo, N-0314
Norway
Tel: +47 2206 7995
Web: http://www.sintef.no

SINTEF Microsystems and Nanotechnology (MiNaLab) owns a state-of-the-art fabrication facility with a complete silicon processing line including wet and dry bulk etching of silicon and wafer bonding. Our capability includes fabrication of complex devices with more than 15 photolithographic layers and fine lines down to about 0.8 um. The general cleanroom area is of class 1000 and mini environments for sensitive processes are of class 10. This coupled with the long track record and experiences in radiation sensors since the early 80s has resulted in SINTEF MiNaLab now being a leading supplier of advanced silicon radiation sensors for industrial and scientific applications including space science, X-ray instrumentation, high-energy physics and photon science. Our key services are design, prototyping and production of custom design radiation sensors from single and double sided strip sensors, pixel sensors to silicon drift diodes (SDDs). The standard fabrication processes are carried out on 150 mm wafers with thicknesses ranging from 300 micron to 1 mm while the fabrication of 2 mm thick detectors and membrane sensors with active area thickness down to 10 micron has also been successfully realized. Moreover, SINTEF's unique expertise in micro-machining and Micro- Electromechanical systems (MEMS) has facilitated the fabrication of radiation sensors with 3-dimensional structures, which can provide advantages such as edgeless capability, radiation hardness, fast time response, and higher detection efficiency in neutron imaging.

Sparrow Corp. — Booth #313

1179 Dominion Ct.
Port Orange, FL 32129
Tel: +1 800 792 1452
Web: http://www.sparrowcorp.com

SPARROW Corporation provides data acquisition, data analysis and instrument control software and hardware products. SPARROW also provides system integration services to the research, industry and university communities. Custom services include system design and software development on Macintosh, Linux, and Windows based platforms.

Struck Innovative Systeme GmbH — Booth #114

Harksheider Str 102, A
Hamburg, 22399
Germany
Tel: +49 40 608 73050
Web: http://www.struck.de

Struck Innovative systeme offers board level data acquisition electronics and systems in the VME, MTCA. 4 and PCI/PCI Express form factors.The latest 16 channel 250 MSPS 14-bit (125 MSPS 16-bit version available also) SIS3316 board -with GBit/s Ethernet readout support- complements our VME digitizer family which has members with speeds up to 5 GS/s at 10-bit resolution. With the 10 channel 125 MS/s 16-bit SIS8300 digitizer we are among the early adopters of the MTCA.4 standard. In combination with Downconverter and Downconverter/Vectormodulator RTM cards, which are build under license of DESY, a variety of accelerator controls and radar applications is covered. The dual channel 1.6 GSPS, single channel 3.2 GSPS -Virtex 6 based- 12-bit SIS1332 digitizer is the latest extension to our PCI Express product line.Our high performance PCI/PCIe/AdvancedMC/USB3.0 to VME interfaces and digital I/O boards (scalers/counters, input registers e.g.) are used as COTS data acquisition building blocks around the globe in research and commercial test and measurement applications.

Suzhou JT Crystal Technology — Booth #230

No. 19 Dong Cang Road
Taicang, Jiangsu, 215400
China
Tel: +86 51282778035
Web: www.jtcrystaltech.com

JT Crystal Technology Co., Ltd is a high-tech joint enterprise involved in the research and growing of various high temperature oxide crystals by CZ and KY methods. It is founded in July 2012. JT can provide the following Products:Scintillation crystal: LSO, Ce:LYSO, BGO Laser crystal: Nd:YAG, Yb:YAG Other oxide crystal: LN, LT, YVO4 and sapphire etc.

Taiwan Ostor Corp. Booth #207

9F No. 451 Chongyang Rd., Nangang Dist.
Taipei City, Taiwan
Tel: +886227820013
Web: http://www.ost-med.com

In 2013, Crystalux Inc., a customer-oriented manufacturing company of oxide single crystals, joined Taiwan OSTOR Corp.

Our current businesses are:

- Passive/Active Components
- Solar module cells
- Crystals for high end medical equipment, lasers, and optics

The company is based in Taipei and our R&D Center is based in Southern Taiwan and throughout China with service locations in Guangzhou, Beijing, and Shanghai. We develop and manufacture the most technically challenging crystals known for a range of applications, such as scintillators, lasers, optics, and substrates. Taiwan OSTOR mainly adopts the Czochralski (Cz) method to produce single crystals. This method applies to various types of single crystals, the benefits of which, are faster fabrication and lower energy consumption. Our key products are scintillator of Ce:LYSO, single oxide crysta substrates such as LiGaO2, LiAlO2, LSAT, SrTiO3 and high power laser crystals such as Nd(YAG), Nd(GGG). Our company's strengths are: (1) Our R&D ability, (2) Our Production Flexibility (3) Our Product Quality.

Target Systemelektronik Booth #131

Heinz-Fangman-Strasse 4
Wuppertal, 42287
Germany
Tel: 49 202 769 3020
Web: http://target-sg.com

Target Systemelektronik specializes in electronic instrumentation for the detection, measurement and analysis of gamma radiation from both naturally occurring and manmade sources. The company focus is on the design and manufacturing of state-of-the art instruments for the nuclear medicine market and the security market.

The Target U100 is the most advanced digital tube base for a variety of scintillator-based radiation measurement applications. It provides outstanding performance in single detector monitoring applications as well as in highly sophisticated multi-parameter settings. Two high precision 310 MHz ADCs digitize both anode and dynode signals with 14 bit resolution. The unique design allows for digital signal processing accuracy and features which have not been achieved in conventional systems. Thus, a dynamic range of 1:1,000,000 (e.g. 100 eV to 100 MeV) can be reached with a single detector attached. The timing accuracy with external triggering is in the picosecond range. Time tagged events are transferred as list mode data over the Gigabit Ethernet connection at more than 1 million cps throughput.

A groundbreaking patented gain stabilization works without LEDs or radioactive sources. It compensates PMT temperature effects as well as high count rate shifts. The onboard dual core ARM processor runs the built-in browser based MCA software package. No external drivers or other software packages are required. Any web browser application connected via Ethernet is sufficient. The Target U100 comes with a HTTP REST interface for state-of-the-art integration into third party application software and larger multi-parameter system structures.

Key features

- Supports fast and slow scintillator materials (CLYC, CeBr, LaBr3(Ce), NaI(Tl), PVT, etc.)
- Ultra high speed digital signal processing with 2 x 310 MHz sampling rate
- GBit POE Ethernet interface
- Network accessible embedded MCA software
- Pico-second timing resolution
- List mode data acquisition
- Novel gain stabilization system (patents pending)
- Easy system integration by HTTP REST interface
- Positive or negative detector supply, up to 2000 volts

- 8 - 10 dynodes support
- Configurable voltage divider chains K

Tech-Etch, Inc. Booth #228

45 Aldrin Road
Plymouth, MA 02360
Tel: +1 508 747 0300
Web: http://www.Tech-Etch.com

Tech-Etch manufactures precision light-gauge flat and formed metal parts as well as fine-line and microvia flexible printed circuits. Tech-Etch has been involved in the manufacture of GEM foils and read-out boards for over 10 years, and is fully licensed by CERN to sell GEM foils for both research and commercial applications. The company also manufactures a complete line of RFI/EMI shielding gaskets, honeycomb vent panels, and board-level shielding. Tech-Etch operates three facilities totaling approximately 350,000 sq. ft. of manufacturing space, supporting prototype through production volumes.

Vertilon Corporation Booth #206

66 Tadmuck Road
Westford, MA 01886
Tel: +1 978 692 7070
Web: http://www.vertilon.com

Vertilon is the leader in high performance multichannel data acquisition systems for silicon photomultipliers, multianode photomultiplier tubes, avalanche photodiode arrays, and other charge-based sensors. Our core product line is the PhotoniQ, a family of charge integrating and photon counting multichannel DAQ systems that interface to optical sensors and collect and process their output signals. We also manufacture sensor interface boards specifically designed for the latest silicon photomultiplier arrays and multianode PMTs available on the market today. Vertilon's products have been used throughout the world by leading universities, government laboratories, and corporate R&D groups in applications that include particle physics, positron emission tomography (PET), flow cytometry, bioaerosol detection, SPECT, gamma cameras, fluorescence detection, and confocal microscopy.

W-IE-NE-R, Plein & Baus, Ltd. Booth #110, 112

300 E. Auburn Ave.
Springfield, OH 45505
Tel: +1 937 324 2420
Web: http://www.wiener-d.com

W-IE-NE-R Plein & Baus GmbH is providing a full line of electronics for detector read-out, experiment control and diagnostics. Combining superior designed mechanic chassis with high quality, microprocessor controlled, low noise power supplies and a high level of integrated diagnostic and monitoring W-IE-NE-R became a world leader for powered chassis in all standards as VME, VME64x, VXS, uTCA, … . In a joint venture between W-IE-NE-R and ISEG we provide the new high density, multi-channel low and high voltage power supply system MPOD. MPOD can house up to 480 independent high voltage, 80 low voltage channels or any mixture of low and high voltage. With MARATON in addition to laboratory style power supplies also a range of radiation hard and magnetic field tolerant units was developed. A family of high performance controllers for VME and CAMAC with USB2 interface, multi-functional VME and NIM modules as well as a new VME display and bus-analyzer completes our line of instrumentation.

XIA LLC Booth #325

31057 Genstar Rd.
Hayward, CA 94544
Tel: +1 510 401 5760
Web: http://www.xia.com

XIA LLC develops and sells advanced signal processors for use with X-ray and gamma-ray detectors and related instruments for applications in research, industry and homeland security. Our core technology of high-performance digital pulse processors (DPPs) is available in flexible stand-alone instruments, dedicated embedded configurations, including OEM applications, and for large multi-channel installations. From low power, hand-held spectrometry through extremely high count rate applications to integrated systems for multi-element detectors, XIA provides robust, high performance solutions that advance the state of the art yet are affordably priced. New This Year: Image capture electronics for 256 channel position sensitive PMT.32-channel DPP card with mating to customized analog front ends.Higher speed PIXIE multi-channel DPPs. New and improved MicroDXP card for X-ray and gamma handheld and bench-top applications.

X-RAY.CAMERA Booth #133, 232

TieToTie 3
Espoo, 2150
Finland
Tel: +358 414313212
Web: http://www.advacam.com

A photon counting community x-ray.camera will be launched in the IEEE industrial exhibition. The community is a place to discuss and create connections for people working in the field of photon counting cameras. Mainly the field of x-ray imaging is highlighted but as well the fields of particle tracking and radiation monitoring are covered. In x-ray.camera user is able to learn about the technology, find out examples of applications together with image galleries, ask questions from experts or other community members and browse and compare photon counting cameras from different providers. No registration is required to view all the content.

At the industrial exhibition booths #133 and #232 you can meet other community members and experts. Three community companies are demonstrating their cameras in different applications. The companies present at the community booth are Advacam, Crytur, Jablotron and WidePIX.

Advacam is specialized in fabrication of the edgeless and planar silicon sensors and micro packaging of silicon and compound semiconductor sensors. The edgeless sensors are needed in 4-side buttable hybrid pixel detector modules used in construction of the large area camera offered by WidePIX. Advacam has its own silicon sensor, micro bumping and flip chip processes in-house. The micro-packaging service includes wafer level readout ASIC bump bonding with standard SnPb and low temperature InSn solder alloy. A thin film under bump metallization is available for the silicon pixel sensors. At the booth you may find a gallery of state of the art pixel sensors, such as thin Medipix3 TSV chip flip chip bonded to an edgeless sensor.

Crytur is a traditional European manufacturer of integrated solutions based on synthetic single crystal materials such as garnets, perovskites and silicates. Coupling bulk scintillators or thin imaging screens with appropriate readout results in a wide variety of devices suitable for x-ray imaging and radiation detection. The portfolio further includes a photon-counting pocket size device - Crypix that delivers a viable solutions for many industries. An overview of our activities such as a collection of scintillating screens, X-ray imaging solutions or Crypix will be displayed at the booth. You are invited to discuss your application with our experts.

Jablotron is a technological company with a wide range of activities supporting technical education. One of the results coming from the international cooperation is Jablotron MX-10 Digital Particle Camera - a state-of-the-art, Timepix-based educational tool for demonstrating radiation and analyzing radioactive sources. At the site you may see the MX-10 kit in practice demonstrating the physics principles with a set of unique experiments.

WidePIX was established in 2013 as a spin-off of Institute of Experimental and Applied Physics (IEAP) of Czech Technical University in Prague (CTU). The Company is licensed by CERN for commercialization of technology of energy sensitive pixel particle counting detectors Medipix/Timepix. The WidePIX cameras cover broad field of applications starting from X-ray radiography up to radiation monitoring and safety. We offer compact and easy to use imaging devices and multilayered particle trackers of any size ranging from 15x15 mm2 (65 kpixels) up to 150x150 mm2 (6.5 Mpixels).

X-Ray Imaging Europe — Booth #100

Stefan-Meier-StraBe 21
Freiburg i. Br., D-79104
Germany
Tel: +49 761 203 4775
Web: http://www.xi-europe.de

X-ray Imaging Europe XIE is producing and seeling semiconductor detectors and electronics for X- and Gamma-rays. XIE sells two different types of products:

- energy resolving detectors using CdZnTe sensors
- spatial resolving systems with the Medipix2 and Timepix electronics.

X-ray Imaging Europe has the licence for the production of Medipix detectors from the Medipix Collaboration from CERN.. XIE is the only company offering a 2x3 Hexa system with 400.000 pixels based on a monolithic 28x42 mm2 sensor area. The Medipix2 and Timepix detector systems single and Hexa modules are available with the sensor materials silicon, CdTe and GaAs. X-ray Imaging Europe is offering the designing, production and testing of individual detector systems.

X-Ray Imatek S.L. — Booth #122

Eureka Building, CAMPUS UAB
Bellaterra, 8193
Spain
Tel: +34 935 868 961
Web: http://www.xray-imagtek.com

X-Ray Imatek is a company focused on research, development and marketing X/Gamma-Ray detectors based on photon counting technology to be applied in a large number of sectors like Scientific Research, Security and Defense, NDT (Non-Destructive Testing) and Medical Imaging amongst others. XRI is a spin-off of the High Energy Physics Institute in Barcelona (IFAE) and it is based on the Medipix ASIC, the hybrid pixel detector family developed at CERN, providing a complete catalogue of end-user products and full lab services for customized solutions. This year, XRI introduces the eX Series: a new versatile and expandable readout system for all Medipix detectors, designed for medium and large facilities.

X-Spectrum GmbH — Booth #102

Notkestr. 85
Hamburg 22607
Germany
Tel: 49 (0) 40 8998 3959
Web: http://www.x-spectrum.de/

X-Spectrum is dedicated to the scientific advancement through research utilizing synchrotron radiation. It provides the LAMBDA system, a dedicated X-ray camera that is unique in its capabilities. As a spin-off of DESY, which originally developed LAMBDA, X-spectrum not only provides the camera itself, but also dedicated IT equipment and software for seamless integration into the most common synchrotron beamline control systems. We firmly believe that detectors can be easy to use, plug and play devices.

MULTI CHANNEL POWER SUPPLY SYSTEMS

Mpod

W-Ie-Ne-R and **iseg** are presenting **Mpod**, the new compact universal multichannel low- and high- Voltage system, featuring:

- 19" Bin with module cage for 10 LV or HV modules
- 8 channel low voltage modules
- 4 to 48 channel high voltage modules
- LV and HV modules freely combinable
- MPOD-Controller with Ethernet, CANbus and USB interface, interlock input,
- Web-ready + SNMP, OPC server , EPICS supported
- Optional graphic display + local monitoring and programming,
- 8U bin for bottom cooling air intake, 9U high with dust filter
- Modular design: fan tray and primary power supply easily removable

Mpod mini - 4 HV/LV slots

- 19" rack mountable or desktop unit
- For 4 HV and / or LV module slots
- MPOD controller, optional display and local control
- Max. 32 LV channels
- Max. 192 HV channels

Mpod micro - 1 HV or LV slot

- 19" rack mountable or desktop unit
- For 1 HV and / or LV module slots
- MPOD controller
- Max. 8 LV channels or max. 48 HV channels

Low voltage modules

- Low Voltage DC modules with 8 channels of 10A/50W max. with 8V, 16V, 30V, 60V and 120V ranges
- Low noise and ripple, all DC outputs floating with individual return lines, individually sensed
- Voltage and current settings / monitoring for each channel, 15 bit resolution
- Programmable channel parameters (voltages, currents, powers and their limits, ramping, group behavior, etc.) and monitoring via Ethernet and USB

LV-Type	Channels	Voltage range	Max Current	Peak power per channel	Resolution V, I	Ripple
MPV 8008L	8	0V ... 8V	5A	40W	15bit	<3mV
MPV 8008	8	0V ... 8V	10A	50W	15bit	<3mV
MPV 8015	8	0V ... 15V	5A	50W	15bit	<2mV
MPV 8030	8	0V ... 30V	2.5A	50W	15bit	<2mV
MPV 8060	8	0V ... 60V	1A	50W	15bit	<2mV
MPV 8120	8	0V ... 120V	0.1A	20W	15bit	<2mV

Please visit us at Booth 110

EXHIBITOR PRESENTATIONS

All Exhibitor Presentations will take place in WSCC Room 4C-3

Tuesday, November 11, 2014

13:00 **What Digital Photon Counting Detectors Can Bring for Clinical PET**
Presenter: Lingxiong Shao, Systems Engineer Philips Healthcare, BG Imaging Systems Cleveland, USA

Although SiPM detectors have been investigated by many researchers, in particular, for animal imaging, scaling this technology to clinical imaging brings new challenges. We will present a Digital Photon Counting technology which optimizes the design for easy scaling to different PET systems. In addition, the DPC PET system provides new areas for reconstruction innovation.

14:00 **Methods of Improving Silicon Neutron Detectors with comparisons to Resilient Diamond Detectors fabricated by the Company**
Presenter: Dr Susanne Walsh and Dr Gwenaelle Lefeuvre, Micron Semiconductor

Micron Semiconductor Ltd was selected for UK's TSB Nuclear Power Initiative, the first of the three year project has been completed. Results will be presented on Micron's basic monitor detector with its design modified to include neutron converter materials and processes to achieve an order of magnitude enhanced neutron performance with gamma rejection together with comparisons made to the single crystal diamond detectors fabricated by the company when submitted to the same neutron radiation spectrum. Potential applications for both silicon and diamond solid state detectors will be included in the presentation.

Wednesday, November 12, 2014

09:00 **eX Series, a new readout solution for all Medipix detectors**
Presenter: Victor S. Rojas, X-Ray Imatek S.L.

X-Ray Imatek introduces the eX Series, a high-speed readout system for all the Medipix ASIC family, with different sensor options, expandable and interchangeable detector parts, and multi-platform compatibility.

09:30 **Alibava Systems: Tools for particle physics research and education**
Presenter: Manuel Lozano, Alibava Systems, S.L.

The ALIBAVA SYSTEM is the first compact and portable system for the characterization of microstrip semiconductor radiation detectors. It is plug&play with windows and linux analysis software included. During the last year the company has developed a large set of new boards complementing the basic system for special detectors: double side detectors, DC coupled detectors, double-end detectors, double side board with two detectors at 90 degrees, self-triggering board, miniature board, etc. Nevertheless, the main novelty presented at 2014 NSS-MIC Conference is the Eduactional Alibava Systems (EASY). It is a new system specifically designed for its use in universities and educative institutions to study at small scale basic or complex experiments with silicon microstrip detectors similar to the ones performed in the actual

research field in facilities like CERN. It includes an Alibava System, 128 channel microstrip detector with self trigger, laser, power supply, and exercise book ready to be connected to a PC. There is also a carbon fiber window for experiments with radioactive sources.

10:30 Commercialisation of Novel Scintillators for Gamma and Neutron Detection
Presenter: Dr Keith Hutton, Hilger Crystals

Novel scintillator materials are continually being researched, but the number that reach full commercial potential is limited, mainly by finding a viable route from the laboratory to industry. Dynasil Corporation developed a route to market from novel scintillation materials by combining the research portfolio of RMD with the commercial crystal manufacturing capabilities of Hilger Crystals Ltd. This collaboration has resulted the development of manufacturing capabilities to produce novel scintillators on a commercially viable scale. This presentation will include the latest developments in the commercial production of 1.5" and 2" diameter CLYC and introduce future products, notably CLLBC, SrI2, Gamma/Neutron plastics and ceramic scintillators.

11:00 Full digital approaches to radiation spectroscopy and measurements in Nuclear Physics
Presenter: Carlo Tintori, CAEN Technologies

The use of fast, multichannel waveform digitizers able to run on line Digital Pulse Processing algorithms paves the way to a full digital approach to radiation detection and measurement. By combining suitable, modular hardware, DPP firmware and acquisition software tailored for the specific application, it is possible to combine in a single, easy DAQ system several measurements such as energy spectroscopy, fine timing, pulse shape discrimination and multiparametric analysis, squeezing and simplifying, therefore, the setup if compared to the traditional electronics.

13:00 The newest generation mechanical coolers from ORTEC
Presenter: Gregor Geurkov, Greg Martin, Eric Broerman, ORTEC/AMETEK

ORTEC pioneered mechanical cooling of HPGe detectors in early 80s by introducing a long list of successful cooling products. Two years ago ORTEC acquired Sunpower, a mechanical cryocooler manufacturer. This vertical integration allowed ORTEC to develop highly reliable and efficient new electro-mechanical (ICS) and hybrid (Mobius) cooling systems, which will be discussed in this workshop.

14:00 Radiation Detection Technologies for Medical, Nuclear, Industrial and Security Applications
Presenter: Scott Cunningham & Rick Smith, Kromek

The Kromek Group offers many innovative solutions to serve the emerging radiation detection needs of the medical, nuclear, industrial and security markets. Kromek has expertise in developing detector materials such as CdZnTe, detector fabrication, ASICs and electronics design, bonding, algorithm and software development, and full systems engineering and test. To serve our customers, Kromek delivers OEM components and modular technology platforms that enable the development of advanced imaging and radiation detection solutions.

15:00 **Hybrid Photon Counting (HPC) Detectors for X-ray Applications in Industry and Medicine**
Presenter: Christian Broennimann, Dectris Ltd.

DECTRIS is the technology leader in development and production of HPC pixel detectors. Our well known PILATUS family is now available with CdTe sensors for X-ray applications btw 20 and 120 keV. The EIGER product line is our high resolution, high speed pixel detector family for diffraction and imaging applications.

16:00 **SiPM Manufacture and Reliability for High Volume Applications**
Presenter: Dr. Carl Jackson, SensL Technologies, CTO and Founder

SiPM's are now technically well understood and now in mainstream use in a wide range of applications. Less discussed, however, are important metrics such as reliability, uniformity, and long term cost curves. SensL will present statistical data on its SiPM reliability testing and uniformity data from a long term study where >500K SensL sensors were tested. The latest C-Series low noise SiPM's will also be presented with lab results showing CRT and energy resolution with a wide range of crystal sizes and types.

17:00 **Germanium Gamma-ray Imaging Detector: GeGI**
Presenter: Ethan Hull, Ph.D., CEO PHDS Co.

The physics of segmented detector contacts, crystal growth and gamma-ray imaging are combined to create GeGI, the Germanium Gamma-ray Imaging detector system. The spatial and energy resolution provide gamma-ray data useful for nuclear physics, nuclear medicine research, and security applications. Example measurements are described.

Thursday, November 13, 2014

09:00 **KETEK – Creative Detector Solutions**
Presenter: Dr. Reinhard Fojt, Managing Director KETEK

KETEK as the leading Silicon Drift Detector manufacturer is offering a broad portfolio with active areas from 7mm² to 150mm² and a complete set of electronics. KETEK further presents its wide Photo Multiplier (SiPM) family with single channel and array solutions.

10:30 **Developments in Radiation Detection Solutions**
Presenter: John Frank, Saint-Gobain Crystals

Saint-Gobain Crystals will present recent developments in detector solutions for Security, Medical and Physics needs. The discussion will include details on scintillator materials and detector development including recent advances achieved to improve performance of materials. Innovative integration concepts recently developed to support and increase customer capabilities will be shown.

11:00 Latest Developments in Photomultiplier Tube Technology
Presenter: Kengo Watase, Hamamatsu

Hamamatsu will discuss the latest developments in our Photomultiplier Tube technology including: Low radio isotope PMTs, high speed PMTs, large format PMT as well as our high QE PMTs.

13:00 Updates from the SPADnet Project - fully digital, scalable and networked photonic component for time-of-flight PET applications
Presenter: Edoardo CHARBON (TUDELFT & EPFL), Gábor NEMETH (Mediso Medical Imaging Systems)

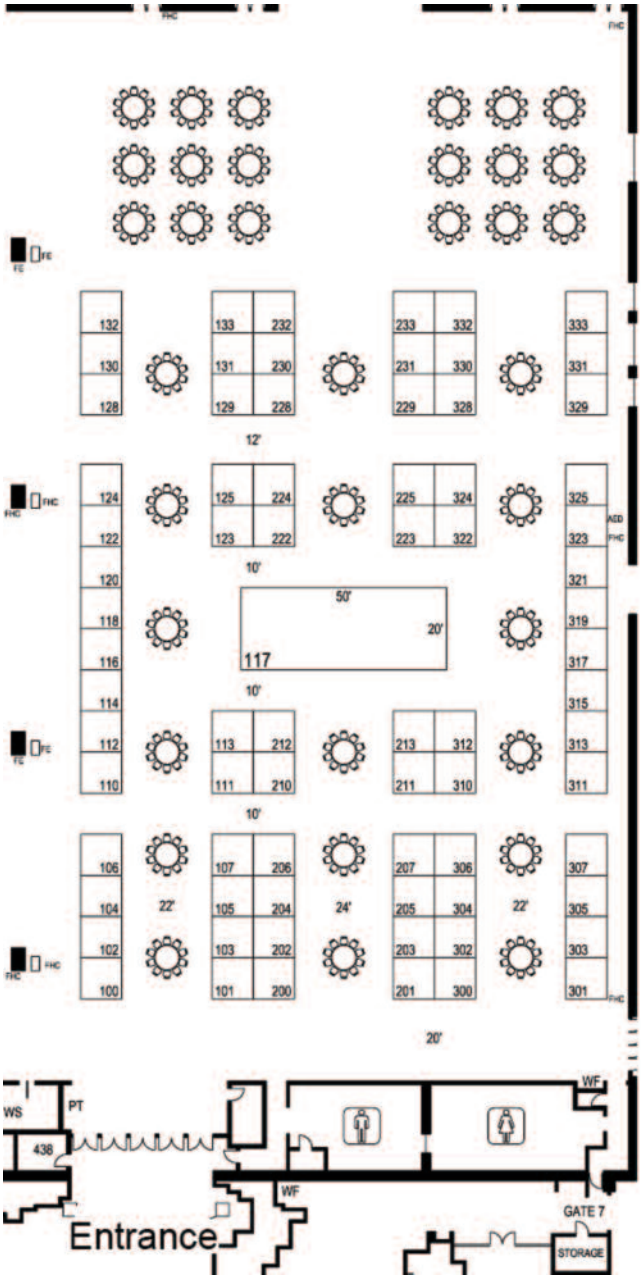
The SPADnet FP7 European project is aimed at a new generation of fully digital, scalable and networked photonic components to enable large area image sensors in Time-of-Flight PET. An overview of recent project results at chip and module level will be followed by a Q&A session and a system demonstration.

14:00 Latest Developments in MPPC (SiPM) Technology
Presenter: Koei Yamamoto, Hamamatsu

Hamamatsu has made significant improvements in basic performances of the MPPC (SiPM). Mainly we have had nice results on Dark current reduction, PDE increase and Crosstalk reduction. These performances improvements have made the MPPC more of a "real solid state photon counting device". For higher resolution application, 1mm 2 chip size MPPC was developed with TSV and 4-side buttable structure. For PET applications, we developed a high performance PET Module coupled together with Scintillation crystals, high time resolution MPPCs and optimized signal processing ASICs. This PET module should be suitable for TOF-PET application.

Floor Plan

Washington State Convention Center - Hall 4A



2015 IEEE Nuclear Science Symposium & Medical Imaging Conference

22nd International Symposium on Room-Temperature Semiconductor X-Ray and Gamma-ray Detectors

San Diego
California

Town and Country Hotel
31 October - 7 November

Electronics
Radiation Detectors
Instrumentation
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Applications in Medical Imaging, Physics, Industry, Homeland Security, Space, and Biology

Abstract Submission Deadline: 5 May, 2015
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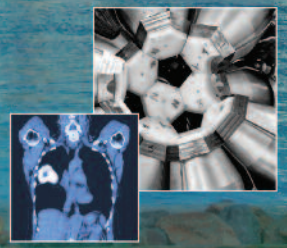

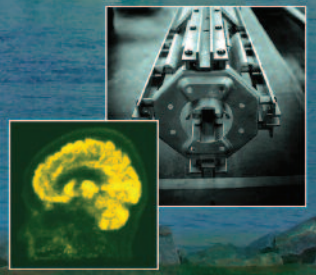

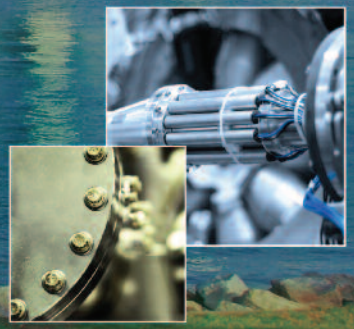

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